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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/696,666	10/25/2000	Andy Kahn	103.1049.01	4165

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EXAMINER
TORRES, JOSEPH D

ART UNIT	PAPER NUMBER
2133	

DATE MAILED: 03/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

		Application No.	Applicant(s)
Office Action Summary		09/696,666	KAHN ET AL.
		Examiner	Art Unit
		Joseph D. Torres	2133

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 February 2005*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *86-107* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *86-107* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 January 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date *11/01/2004*.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____ .

DETAILED ACTION

Response to Arguments

1.   Applicant's arguments with respect to previously examined claims and the

Examiner's previous Office Action are moot since all previously examined claims have

been cancelled.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of
> making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the
> art to which it pertains, or with which it is most nearly connected, to make and use the same and shall
> set forth the best mode contemplated by the inventor of carrying out his invention.

2.   Claims 86-96 rejected under 35 U.S.C. 112, first paragraph, as failing to comply

with the enablement requirement. The claim(s) contains subject matter which was not

described in the specification in such a way as to enable one skilled in the art to which it

pertains, or with which it is most nearly connected, to make and/or use the invention.

MPEP § 2164.08(a) states "A single means claim, i.e., where a means recitation does

not appear in combination with another recited element of means, is subject to an

undue breadth rejection under 35 U.S.C. 112, first paragraph. In re Hyatt, 708 F.2d

712, 714-715, 218 USPQ 195, 197 (Fed. Cir. 1983) (A single means claim which

covered every conceivable means for achieving the stated purpose was held

nonenabling for the scope of the claim because the specification disclosed at most only

those means known to the inventor.)". Claim 86 is an apparatus claim comprising a

single means of storing particular data into storage block data structure.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3.   Claims 86-96 are rejected under 35 U.S.C. 112, second paragraph, as being

incomplete for omitting essential elements, such omission amounting to a gap between

the elements. See MPEP § 2172.01. The preamble of claim 86 recites an "apparatus

that stores data and attempts to protect said data" whereas the body of claim 86 recites

a means of storing particular data into storage block data structure. The omitted

elements are: any connection to the "**apparatus** that stores data and attempts to protect

said data" [Emphasis added] and the storage block data structure in the body of the

claim (Note: the storage block data structure in the body of the claim as claimed in the

body of the claim can exist independently of the apparatus and the disk drives in the

preamble since a storage block is an abstract data structure).

Claims 97-107 are rejected under 35 U.S.C. 112, second paragraph, as being

incomplete for omitting essential elements, such omission amounting to a gap between

the elements. See MPEP § 2172.01. The preamble of claim 97 recites "A method of

storing data and attempting to protect said data from storage errors in an array of disk

drives" whereas the body of claim 97 is directed to a method for creating an abstract

storage block data structure. The omitted steps are: any relationship between storing

data to an array of disk drives.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 86-96 are rejected under 35 U.S.C. 101 because the claimed invention is

directed to non-statutory subject matter. Claim 86 is directed to an abstract data

structure, a storage block. Data structures are non-statutory.

Claims 97-107 are rejected under 35 U.S.C. 101 because the claimed invention is

directed to non-statutory subject matter. Claim 97 is directed to an abstract data

structure, a storage block. Data structures are non-statutory.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4.   Claims 86, 91-93, 97 and 102-104 are rejected under 35 U.S.C. 102(b) as being

anticipated by Hashimoto; Minoru et al. (US 5864440 A, hereafter referred to as

Hashimoto).

35 U.S.C. 102(b) rejection of claim 86.

Hashimoto teaches storage blocks that store at least data, one or more block numbers,

and one or more checksums, with at least one of said checksums being at least partially

for at least one of said block numbers (col. 1, lines 25-29 in Hashimoto teaches an error

correction code is generated from the combined data comprising both the user data and

the positional information, the positional information including track information for

identifying track position and sector information for identifying a so-called sector ID; col.

6, lines 45-51 in Hashimoto teaches a particular embodiment whereby positional

information comprises a Logical Block Address LBA which is a block number

representing the Address of the block and that the 20 byte ECC checksum is generated

from 512 bytes of data combined with the 3 bytes LBA; hence Hashimoto teaches a 535

byte storage block that stores 512 bytes of data, a 3 byte block number and a 20 byte

checksum, with the 20 byte checksum being at least partially for the LBA block number).

35 U.S.C. 102(b) rejection of claim 97.

Hashimoto teaches determining data for a storage block (Host 32 and I/O 42 in Figures

4 and 5 are devices for determining data for a storage block to be stored on the disk

array 11); determining one or more block numbers for said storage block (Sector

information block in Figure 5 is a means for determining one or more LBA block

numbers for said storage block to be added to the data to be stored); determining one

or more checksums for said storage block (ECC block in Figure 5 is a means for

determining one or more checksums for said storage block); and storing at least said

data, said one or more block numbers, and said one or more checksums in said storage

block; wherein at least one of said checksums is at least partially for at least one of said

block numbers (col. 1, lines 25-29 in Hashimoto teaches an error correction code is

generated from the combined data comprising both the user data and the positional

information, the positional information including track information for identifying track

position and sector information for identifying a so-called sector ID; col. 6, lines 45-51 in

Hashimoto teaches a particular embodiment whereby positional information comprises

a Logical Block Address LBA which is a block number representing the Address of the

block and that the 20 byte ECC checksum is generated from 512 bytes of data

combined with the 3 bytes LBA; hence Hashimoto teaches a 535 byte storage block that

stores 512 bytes of data, a 3 byte block number and a 20 byte checksum, with the 20

byte checksum being at least partially for the LBA block number).

35 U.S.C. 103(a) rejection of claims 91 and 102.

Col. 6, lines 45-51 in Hashimoto teaches a particular embodiment whereby positional

information comprises a Logical Block Address LBA which is a block number

representing the Address of the block and that the 20 byte ECC checksum is generated

from 512 bytes of data combined with the 3 bytes LBA; hence Hashimoto teaches a 535

byte storage block that stores 512 bytes of data, a 3 byte block number and a 20 byte

checksum, with the 20 byte checksum being at least partially for the LBA block number.

Hence, Hashimoto teaches that the 20 byte ECC checksum is appended to the 515

bytes of data and positional information.

35 U.S.C. 103(a) rejection of claims 92 and 103.

See Figure 5 in Hashimoto.

35 U.S.C. 103(a) rejection of claims 93 and 104.

Col. 1, lines 18-22 in Hashimoto.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5.   Claims 87-90 and 98-101 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Hashimoto; Minoru et al. (US 5864440 A, hereafter referred to as

Hashimoto) in view of Kim; Tae-eung (US 5386425 A).

35 U.S.C. 103(a) rejection of claims 87 and 98.

Hashimoto substantially teaches the claimed invention described in claims 86 and 97

(as rejected above).

However Hashimoto does not explicitly teach the specific use of a first checksum for

said data and a second checksum for said first checksum and said at least one of said

block numbers.

Kim, in an analogous art, teaches a first checksum (OP1 in Figure 1 of Kim) for said

data and a second checksum (IP in Figure 1 of Kim) for said first checksum and said at

least one of said block numbers (Note: the inner parity checksum IP is used to protect

both Data and the outer parity Checksum OP1 in Figure 1 of Kim).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the

invention was made to modify Hashimoto with the teachings of Kim by including use of

a first checksum for said data and a second checksum for said first checksum and said

at least one of said block numbers. This modification would have been obvious to one

of ordinary skill in the art, at the time the invention was made, because one of ordinary

skill in the art would have recognized that use of a first checksum for said data and a

second checksum for said first checksum and said at least one of said block numbers

would have provided protection for block ID information.

35 U.S.C. 103(a) rejection of claims 88 and 99.

Col. 1, line 38-45 in Hashimoto teach that virtual block numbers LBA are made to correspond to absolute disk lock numbers ABA, hence the LBA substantially includes both virtual and absolute disk block numbers, LBA and ABA.

35 U.S.C. 103(a) rejection of claims 89 and 100.

Col. 6, lines 45-51 in Hashimoto teaches a particular embodiment whereby positional information comprises a Logical Block Address LBA which is a block number representing the Address of the block and that the 20 byte ECC checksum is generated from 512 bytes of data combined with the 3 bytes LBA; hence Hashimoto teaches a 535 byte storage block that stores 512 bytes of data, a 3 byte block number and a 20 byte checksum, with the 20 byte checksum being at least partially for the LBA block number.

35 U.S.C. 103(a) rejection of claims 90 and 101.

See ECC Algorithm in Figure 5 of Hashimoto.

6.   Claims 94-96 and 105-107 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hashimoto; Minoru et al. (US 5864440 A, hereafter referred to as Hashimoto) in view of Dewey; Douglas William et al. (US 5864655 A, hereafter referred to as Dewey).

35 U.S.C. 103(a) rejection of claims 94-96 and 105-107.

Hashimoto substantially teaches the claimed invention described in claims 86, 91-93, 97

and 102-104 (as rejected above).

However Hashimoto does not explicitly teach the specific use of checksums for a

storage block resides in one of the sectors of that storage block and is at least partially

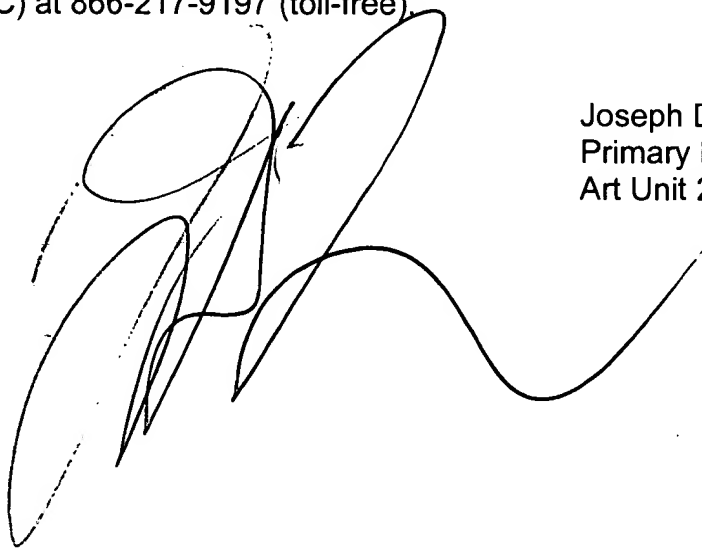for data in others of the sectors in that storage block.

Dewey, in an analogous art, teaches checksums for a storage block resides in one of

the sectors of that storage block and is at least partially for data in others of the sectors

in that storage block (Figures 4A and 4B in Dewey teach that an ECC block is stored

across several disks with the ECC block distributed in the corresponding sectors of the

ECC block).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the

invention was made to modify Hashimoto with the teachings of Dewey by including an

additional step of use of checksums for a storage block resides in one of the sectors of

that storage block and is at least partially for data in others of the sectors in that storage

block. This modification would have been obvious to one of ordinary skill in the art, at

the time the invention was made, because one of ordinary skill in the art would have

recognized that use of checksums for a storage block resides in one of the sectors of

that storage block and is at least partially for data in others of the sectors in that storage

block would have provided the opportunity for bit-by-bit reconstruction of data in the

case that one of the disks is corrupted (col. 1, lines 42-46 in Dewey).

Conclusion

7.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Joseph D. Torres whose telephone number is (571)

272-3829. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Albert Decady can be reached on (571) 272-3819. The fax phone number

for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published

applications may be obtained from either Private PAIR or Public PAIR. Status

information for unpublished applications is available through Private PAIR only. For

more information about the PAIR system, see http://pair-direct.uspto.gov. Should you

have questions on access to the Private PAIR system, contact the Electronic Business

Center (EBC) at 866-217-9197 (toll-free).

Joseph D. Torres, PhD
Primary Examiner
Art Unit 2133